# Change for Good: the Effect of FTSE4Good Index on Environmental Management

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**Abstract**

We analyse the response of 1,046 companies to the introduction of more rigorous environmental management standards by the FTSE4Good Index in 2002. This change threatened 388 firms with deletion from the index and prompted an extensive programme of company engagement by FTSE. We use this natural experiment to contrast the response of firms subject to engagement and facing the threat of deletion from the index with a control group comprised of companies that were non-compliant with the new standards, but not threatened with deletion or engaged with by FTSE. By 2005, 49% of the treatment group had adapted to meet the new standards whereas only 23% of the control group had done so. This result is statistically significant even after controlling for environmental risk, industry, country, governance and financial performance. Our results are consistent with the proposition that the engagement and the threat of deletion from FTSE4Good motivate improvements to corporate environmental management practice, especially where the threat of exclusion from the index is likely to be costly.

**This is a working paper under development.**

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## 1. Introduction

This paper investigates whether engagement by and threat of deletion from a well-recognised corporate responsibility (CR) index can be a significant driver of the adoption of enhanced corporate social responsibility (CSR) practices by companies. Recent research has raised the debate about the perception of the importance of CR indices in this regard among member-companies (Collison *et al.,* 2009; Slager *et al.*, 2009), but is inconclusive on this point. However, there is strong evidence that, apart from assessing and rewarding companies on their past performance, these indices may have the potential of fostering organisational improvements (Chatterji and Toffel, 2010; Slager, 2009).

Since the adoption and improvement of CSR practices can be a major organisational, strategic and financial challenge for the corporate sector, an important question is whether a CR index can systematically motivate companies to improve their CSR practices. Furthermore, it is important to establish under what circumstances CR indices are more or less effective in driving improvement.

We use the FTSE4Good index, one of the most recognised responsible investment indices, and its environmental criteria as the empirical setting to explore these questions. The largest 2000 or so listed companies in the world are eligible for inclusion in the FTSE4Good index, as long as they pass a set of CSR criteria. In 2002, the starting point for this study, around 40% of eligible companies met the required FTSE4Good criteria. At this time, FTSE4Good announced that it was strengthening its environmental management criteria. FTSE gave companies included in the index in 2002 but not complying with the new criteria until 2005 to meet its new criteria or to face deletion and embarked on an extensive programme of engagement with these companies. On the other hand, FTSE did not establish any contact with companies that were eligible but not included in the index. We use a sample of eligible companies assessed by FTSE4Good both in 2002 and 2005. Out of all companies in our sample that did not comply with the new criteria at the time they were announced, 388 were included in the index in 2002 and

658 were not. This setting provides a natural experiment where we are able to observe the impact of engagement, allied to the threat of exclusion from the FTSE4Good index, on environmental management practices.

After controlling for environmental risk, governance, industry and country effects on the probability of compliance with the environmental management criteria and the probability of inclusion in the FTSE4Good index, it was found that our results are consistent with the proposition that the combination of engagement and the threat of deletion significantly increase company's adoption of the environmental management practices required by FTSE4Good criteria. We also find that the engagement effect is stronger where firms are more likely to be a member of the index and we interpret this as reflecting the increased cost of being excluded.

The paper is organised as follows. Section 2 presents the FTSE4Good index and environmental criteria requirements. Section 3 reviews the related literature. Next, the hypotheses, methodology and data are described in Section 4, followed by the discussion of the main results in Section 5. Conclusions are presented in the last section.

## 2. FTSE4Good Index Series

### *2.1 General Description*

FTSE4Good is a stock-market index series operated by FTSE Group Ltd., a UK-based index company jointly owned by the Financial Times and the London Stock Exchange. For its FTSE4Good Index Series, FTSE uses its standard All-World Developed (AWD) Indices as its starting point, but excludes any companies that fail to satisfy FTSE4Good CSR criteria. According to the FTSE4Good methodology (FTSE, 2010), the FTSE4Good criteria aim to reflect emerging standards of CSR best practice as embodied in various authoritative codes (e.g. OECD Guidelines for Multinational Enterprises) and in the practice of leading companies. Criteria are selected and amended by an independent Policy Committee comprising various socially responsible investors, CSR experts and academics (FTSE, 2005).

Research for FTSE4Good is conducted by a specialised non-profit research agency, the Experts in Responsible Investment Solutions (EIRIS). EIRIS makes use of information published by companies on their websites and CSR reports, and the results of an annual survey sent to the companies (FTSE, 2010). Each company's compliance with the FTSE4Good CSR criteria is assessed on a six monthly basis by the FTSE Policy Committee, based on recommendations supplied by EIRIS. Decisions are founded on an assessment of compliance with FTSE's rules-based criteria.

FTSE4Good has a commitment to reflect emerging standards of good practice in CSR (FTSE, 2010). This means that, as new practices emerge, the Policy Committee has steadily increased the extent and rigour of criteria it uses to assess companies. FTSE has added several new topics in its ten years of existence - human rights, countering bribery, supply chain labour standards, climate change, and health and safety (FTSE, 2010). It has also increased the strength and coverage of its criteria. For example, the initial environmental criteria required policy, management systems and reporting, but were only applied to the companies defined as being at 'high risk' on environmental issues. Low risk companies did not have to meet any criteria. After 2002, companies were classified as High, Medium and Low risk, and all three groups had to meet different levels of environmental criteria (FTSE, 2004).

Companies that pass the criteria are informed of their inclusion in the index and receive a certificate. While FTSE does not publish the full index list for commercial reasons, every six monthly review includes the changes it makes to the index, announcing the names of both the companies newly joining the index and those that have been 'deleted' from the index. The publicity surrounding these announcements can be significant, particularly if a major company is deleted from the index. For example, several Japanese newspapers ran stories when Toyota was excluded from the index in 2007 on labour rights grounds.

Partly because of the negative publicity effects associated with FTSE4Good, FTSE works to ensure that companies are given adequate warning of criteria upgrades and of the possibility that they may face deletion from the Index (FTSE, 2010). Furthermore, it has adopted the practice of allowing FTSE4Good member companies an extended grace period before it enforces criteria changes. During this period FTSE embarks on a programme of 'engagement' with companies. Affected member companies are notified

of criteria upgrades as much as two years in advance of their potential deletion date and FTSE sends subsequent reminders during the interim. This often gives rise to extensive discussion between the company and FTSE about the nature of criteria requirements and their rationale. The simplified model of the criteria upgrade process is presented in Figure 1.

Figure 1.

While FTSE lavishes considerable attention on companies threatened with deletion from FTSE4Good, the same is not true of non-member companies. Companies eligible for inclusion in FTSE4Good (i.e. those listed on the FTSE AWD Index), but not currently meeting the required criteria, do not receive any contact from FTSE in relation to criteria upgrades. If these companies wish to enter the index, they must comply with upgraded criteria immediately when they are announced (FTSE, 2010).

The regular criteria upgrades mean that most companies in the FTSE4Good index have at some point faced the choice between adopting the CSR practices required by the new FTSE4Good criteria, or being de-listed from the index. If FTSE4Good is irrelevant to company decision-making, then one would expect there to be little or no response to changes in FTSE criteria. If, on the other hand, companies wish to remain included in the index series and wish to avoid any negative publicity associated with deletion, one would expect them to want to use the grace period to adopt the required policies and practices to meet the new criteria.

### *2.2 Environmental Criteria*

The first step in the FTSE4Good process is to determine what risk rating to accord to companies. This is based largely on a firm's business sector membership. On environmental criteria, from 2002, firms are classified as High risk on environmental impact (often chemicals, oil and gas or food production), Medium (for example, electronics or banks) or Low risk (such as software or telecommunications). Companies in different risk bands need to meet different levels of criteria. For environmental

management, these include criteria relating to environmental policy, management and reporting[i].

*Policy*

High risk firms' policy must cover the whole group and meet six indicators of which at least four must be core. The core indicators are that policy refers to all key issues, responsibility for policy is at board or departmental level, a commitment to the use of targets, a commitment to monitoring and audit, a commitment to public reporting. The desirable indicators are globally applicable corporate standards, a commitment to stakeholder involvement, policy addresses product or service impact, and strategic moves towards sustainability. For medium firms policy must cover the whole group and meet at least four indicators of which at least three must be core. For low impact companies they must have published a policy statement including at least one commitment indicator.

*Environmental Management Systems*

For high risk companies where environmental management systems apply to more than one third of activities all six indicators must be met and targets quantified. If EMS applies to more than two thirds of activities the company must meet five indicators, one of which is the requirement for documented objectives and targets in key areas. The indicators are the presence of environmental policy, the identification of significant impacts, documented objectives and targets in key areas (i.e. outlined processes and responsibilities, manuals, action plans and procedures), internal audits against the requirements of the system (not limited to legal compliance), and internal reporting and management review. ISO14001 certification or EMAS registration is deemed to meet all six indicators. Medium risk firms must have EMS covering a third of the company and meet four indicators or if EMS covers less than a third they must have six indicators, including quantitative objectives and targets. Low impact firms have no management requirements.

*Reporting*

Medium and low impact firms have no reporting requirements. High risk firms must have published a report within the last three years, covering the whole group and meeting three core indicators or if not covering the whole group must meet all four core

[i] Description of the requirements is based on FTSE4Good Index Series Inclusion Criteria (2010).

indicators or three core and two desirable indicators. The core indicators are to include text of environmental policy, a description of main impacts, quantitative data, and performance measured against targets. Desirable indicators comprise an outline of an EMS, details of negative events (non-compliance, prosecution, fines and accidents), financial dimensions, independent verification, stakeholder dialogue, and coverage of sustainability issues.

## 3. Literature review

### *3.1 Drivers of Corporate Social Responsibility*

Many companies devote substantial attention and resources to CSR-related activities and programmes (Barnea and Rubin, 2010) in addition to considering social responsibility while making investment decisions. Pressure to improve CSR practices comes from various institutions such as governmental bodies, pressure and lobby groups, non-governmental organisations (NGOs) and other stakeholders (González-Benito and González-Benito, 2006). At the same time, investors appear to be more and more concerned with the impact by companies on the natural environment and social problems (Cox *et al.*, 2004, Kim and Lyon, 2007, O'Rourke, 2003, Reid and Toffel, 2009, Renneboog *et al.*, 2008, Sparkes and Cowton, 2004, among others). While the debate on the relationship between social and financial performance continues[ii], there are other important dimensions, apart from the above market-related ones, which influence socially responsible organisational behaviour.

While scientists have for decades sought to bring attention to ecological issues, it is arguably only relatively recently that the scale of the impact on the environment and its consequences has been acknowledged by the financial and industrial community, resulting in a substantial increase in the environmental awareness of both business and society (Henriques and Sadorsky, 1996). Further, in the developed world, the initiative and relative power of different activist groups and non-governmental organisations has

[ii] There is substantial interest in establishing whether and how the capital market prices the socially responsible behaviour of companies (Mallin *et al.*, 1995, Margolis and Walsh, 2003, Orlitzky *et al.*, 2003, Bauer *et al.*, 2005, Kreander *et al.*, 2005, Barnett and Salomon, 2006, Collison *et al.*, 2008). However, the detailed review of the topic is beyond the scope of this paper.

developed and risen significantly (Reid and Toffel, 2009) making companies increasingly more responsive to the pressures of private politics. In his application of institutional theory to the study of the adoption of corporate responsibility practices, Campbell (2007) argues that, among other institutional factors, private non-governmental initiatives, institutional investors as well as the press can trigger changes in corporate behaviour towards more corporate social responsibility. Related studies explore how different processes of social activism can elicit changes in corporate behaviour related to sustainability (den Hond and de Bakker, 2007; Reid and Toffel, 2009). These and other drivers of voluntary compliance with CSR principles play an especially significant role in situations where some of the regulatory initiatives are transferred to the private sector (Bartley, 2003).

### *3.2 Ratings and Their Impact on Corporate Behaviour*

Among the above-mentioned motivations of voluntary adoption of sustainability practices, rankings and ratings are becoming an inseparable and important part of the organisational environment (Martins, 2005). Ratings reduce information asymmetry between different groups of stakeholders (Chatterji and Toffel, 2010). Such ratings may become an important instrument of shaping the CSR behaviour of corporations.

Some previous studies of the ways in which public measures may change organisational activity focused on problems related to educational establishments (Elsbach and Kramer, 1996; Espeland and Sauder, 2007) and found that in the long term rankings can lead to internalisation by the organisations of the corresponding ranking criteria (Sauder and Espeland, 2009). Recent research has started to examine the impact of rankings on companies rather than educational establishments. In particular, Chatterji and Toffel (2010) analysed the corporate response to being evaluated against a well-recognised environmental rating. They found that companies which are rated poorly on their environmental performance by the KLD ratings respond to the rating by improving their practices. Moreover, the authors examined two important factors which shape the corporate response to the rating. In particular, they conclude that firms with a poorer rating are especially likely to improve their CSR behaviour to enhance the rating position

if they have opportunities for relatively less costly improvement activities and if they operate in a stricter regulatory environment compared to non-rated firms or firms with a higher rating position.

As shown in Slager (2009), CSR managers may use membership of a corporate responsibility index to respect the increased interest and demand by different stakeholder groups for active CSR performance. Moreover, managers feel that the reputation of the company would suffer significantly were it to be excluded from the index. Indeed, evidence shows that companies often declare such a membership in their CSR reports, and the publicity awarded by joining the index or being excluded from can be substantial (Collison *et al.*, 2009). In the study of FTSE4Good index, Slager (2009) reported that companies reacted positively to being included in the FTSE4Good index and to the engagement. The findings also suggested that index criteria become internalised in company policy and improve the perception of CSR in general within the company. Both studies, therefore, offer an important insight into companies' perception of FTSE4Good, for example, the 'reputation and the pressure that would be placed on senior managers if their company were not included in a new FTSE index' (Collison *et al.*, 2009: 45). Further, Collison *et al.* (2009) note that a common sentiment of the respondents was that the changes in activity were not necessarily directly done 'for FTSE4Good', but it was suggested that the index does indeed provide a certain benchmark for company's improvement of corporate responsibility practices. Overall, the results indicate that FTSE4Good has had some impact on company activity, mainly on reporting and monitoring.

Thus, a CR index may achieve the goal of stimulating the changes in mainstreaming corporate responsibility practices through increased disclosure by companies of their CSR activity and by changing CSR-related policies and management practices such as the implementation of a corporate environmental management system (EMS)[iii]. Such systems are shown to enhance the environmental and operations performance and to stimulate the implementation of a wider range of available environmental activities (Melnyk *et al.*, 2003).

[iii] Corporate environmental management systems (EMS) comprise 'the formal system and database which integrates procedures and processes for the training of personnel, monitoring, summarising, and reporting of specialised environmental performance information to internal and external stakeholders of the firm' (Melnyk *et al.*, 2003: 332).

Finally, investors are increasingly beginning to consider a company's attitude and its actions towards preservation of the environment and making social input an equally important and necessary aspect of corporate strategy (Cox *et al.*, 2004, Kim and Lyon, 2007, O'Rourke, 2003, Reid and Toffel, 2009, Renneboog *et al.*, 2008, Sparkes and Cowton, 2004, among others). However, investors often cannot engage with all companies in their portfolios individually. In this case, a corporate responsibility index can provide a mechanism of investor-driven engagement towards corporate adoption of mainstream social responsibility standards. As stated in Reid and Toffel (2009: 1157), 'most empirical research on private politics has focused on the strategies and tactics of social activists, but when and how firms respond to these pressures is much less understood'. We contribute to the existing literature by empirically testing whether an engagement strategy of a well-recognised corporate responsibility index and the threat of exclusion from it can efficiently motivate companies to improve their environmental management practices.

## 4. Methodology

Drawing on the prior literature, the following hypotheses are tested in this paper.

*Hypothesis 1.* FTSE4Good engagement and threat of exclusion have a significant positive effect on the corporate adoption of the management practices required for compliance with the enhanced environmental criteria.

*Hypothesis 2.* The effect of engagement/deletion threat is stronger when the threat of exclusion is likely to be costly.

We use FTSE4Good archival data to test these hypotheses by reconstructing a natural experiment that resulted from the change to FTSE4Good environmental criteria in 2002. The sample for the experiment is the 1,046 companies in the FTSE4Good All World Developed Index (AWD) and eligible for inclusion in FTSE4Good in both March 2002 and March 2005. This sample is divided into a treatment group and a control group. The treatment group consists of 388 companies that were included in the FTSE4Good index in 2002 but failed to meet the enhanced environmental management requirements. This

group received notification from FTSE in 2002 that they would have to meet the new environmental criteria by 2005 or face deletion from the index. They also received repeated contact from FTSE, explaining what the new criteria require and reminding them about the deletion deadline. The control group comprised the 658 companies that were members of the AWD, but were not included in FTSE4Good in March 2002, and also failed to meet the requirements of the new environmental criteria. These companies by definition did not face the threat of deletion from the index or the risk of associated bad publicity, nor did they receive any contact from FTSE explaining the requirements of the new criteria. In the natural experiment we investigate whether the companies in the treatment group were more or less likely to adopt the environmental management practices required for FTSE4Good inclusion in the three years between 2002 and 2005.

However, a direct contrast of the improvements in environmental management might be misleading if those firms that were in the index were closer to complying. This might be expected as they met the earlier, albeit undemanding, environmental management requirements and also complied with FTSE4Good stakeholder and human rights criteria possibly signalling a general commitment to corporate social responsibility.

We therefore model the probability of meeting the new requirements using the full set of firms assessed by FTSE4Good and including environmental risk indicators (High, Medium and Low) identified by the two zero-one dummy variables *High* and *Medium*, a governance indicator (based on compliance with the FTSE4Good stakeholder criteria), industry membership and country.

$$Met_j^{02} = a_0 + a_1 High_j + a_2 Medium_j + a_3 Stake_j + \ldots \\ \sum_{n=1}^{34} i_n Industry_j + \sum_{m=1}^{23} c_m Country_j + e_j \qquad (1)$$

$Met^{02}$ is a dummy variable where one indicates compliance with the new environmental standards for firm *j*, *High* and *Medium* indicate the FTSE4Good risk assessment as high or medium, *Stake* indicates compliance with the FTSE4Good stakeholder requirements and *Industry* and *Country* indicate membership of a particular industry *n* or residing in a particular country *m*. The importance to control for industry and country differences is derived from prior research (Melnyk *et al.*, 2003, Neumayer and Perkins, 2004, González-

Benito and González-Benito, 2006, among others). The model successfully classified 76% percent of the cases and predicts a probability of complying with the environmental requirements given industry, country, risk and governance. Ten industry indicators, 5 country indicators, *High* and *Stake* were statistically significant at 5%. Two countries are excluded from the analysis as all firms in those countries do not meet the environmental criteria. The model was tested for sensitivity to a size measure (log of market capitalisation), financial metrics (market-to-book, price-to-earnings, return on equity and equity returns) and ownership measures (percentage of closely held and free float equity). The data was collected from Datastream. None of these measures were statistically significant. Our variable $PMet^{02}$ is the fitted value from the logit regression and indicates the probability, from 0 to 1, of company *j* meting the environmental requirements in 2002.

We also use a variable that indicates the probability of membership of the FTSE4Good index. This is estimated from a simplified version of the environmental compliance model with the environmental risk indicators, *High* and *Medium* removed and the *Stake* variable also dropped as all firms which do not meet the stakeholder criteria are excluded from the index.

$$Index_j^{02} = a_0 + \sum_{n=1}^{34} i_n Industry_j + \sum_{m=1}^{23} c_m Country_j + e_j \qquad (2)$$

The model correctly classifies 73 percent of the cases and 10 industry and 13 country indicators are statistically significant. Our variable $PInd^{02}$ is the fitted value from the logit regression and indicates the probability, from 0 to 1, of company *j* being in the FTSE4Good index in 2002.

Our test equation models compliance with the new environmental standards in 2005 controlling for risk, governance and the probability of compliance in 2002 and engagement from FTSE4Good.

$$\begin{aligned} Met_j^{05} = {} & b_0 + b_1 High_j + b_2 Medium_j + b_3 Stake_j + b_4 PMet_j^{02} + b_5 Engage_j + \ldots \\ & b_6 PMet_j^{02} \times Engage_j + e_j \end{aligned} \qquad (3)$$

$Met^{05}$ indicates compliance with the environmental regulations in 2005, where *High*, *Medium* and *Stake* are as for equation 1, $PMet^{02}$ indicates the probability of complying with the environmental requirements in 2002 and *Engage* identifies firms in the treatment group, facing the threat of deletion and receiving FTSE engagement. The interaction term between probability of meeting new environmental management requirements in 2002 and engagement/threat of deletion aims to capture the relative effect of engagement/threat of deletion given how close the company is to complying with the new requirements. As the risk and governance indicators were included in equation 1 the probability variable $PMet^{02}$ may capture any impact so the models are estimated with and without each of the control variables.

Finally, the extension of the test equation includes the probability of being in the FTSE4Good index in 2002.

$$Met_j^{05} = b_0 + b_1 High_j + b_2 Medium_j + b_3 Stake_j + b_4 PMet_j^{02} + b_5 Engage_j + \ldots \\ b_6 PMet_j^{02} \times Engage_j + b_7 PIndex_j^{02} + b_8 PIndex_j^{02} \times Engage_j + e_j \quad (4)$$

As in equation 3, the probability variable $PMet^{02}$ may capture any impact of the risk and governance indicators so the models are estimated with and without each of the control variables.

## 5. Results

1,602 firms were evaluated according to the FTSE4Good environmental standards in 2002 of which 452 complied with the new criteria and 666 were in the index. However, some of the firms were disqualified from consideration for the FTSE4Good index membership as their business fell outside accepted criteria and we therefore removed these firms from the sample. This left few firms in the tobacco, aerospace and defence industries so the remaining firms in those categories were also removed leaving 1,454 firms with 405 complying and 665 in the index. We use this sample to estimate the probability of compliance in 2002. The geographical and industrial distributions are presented in the Appendix in Table A1 and Table A2 respectively. The 1,049 firms that did not comply in 2002 include 660 outside the index and 389 within. Of these we do not

have a result for the final 2005 compliance for 3 companies leaving 1,046 firms of which 388 were in the index. This is our test sample.

As Table 1 shows there is a substantial difference between the control and treatment groups. The treatment group has 49% compliance whist the control group only achieves 23%. The difference is highly significant using a conventional chi2 test and is consistent with a substantial FTSE4Good engagement/threat of deletion effect. About 100 firms, close to 10% of the sample, would not have complied with improved environmental management had the compliance rate been the same for the treatment group as the for the control group.

Table 1

However, Table 1 also shows that there are more high risk firms in the control group (49%) compared to the treatment group (5%), there is a higher percentage of firms predicted to comply with environmental management at 2002 in the treatment group (16%) compared to the control group (8%), there is a higher percentage of firms in the treatment group which are predicted to be included in the index (87%) than in the control group (31%) and all of the treatment group complied with the stakeholder requirement in 2002 whereas only 35% of the control group do so. Each classification reveals statistically significant differences and in each instance a clear case could be made to expect a stronger move towards compliance for the treatment group irrespective of the FTSE4Good engagement/deletion threat. It is more difficult for the high-risk firms in the control group to meet the more demanding requirements, there are more firms that would be expected to have already complied within the treatment group, the incentive to match the index inclusion of competitors is stronger in the treatment group, and higher compliance with stakeholder requirements in the treatment group both implies better governance and the possibility of easier inclusion in the index.

In Table 2 we report the tests of the impact of engagement/threat of deletion on compliance after controlling for the environmental risk aspects of the firms, their probability of having already complied with the environmental management requirements, despite not having done so, and their compliance with the FTSE4Good stakeholder requirements. At this stage engagement cannot be separated into engagement

and threat of expulsion. All firms included in the treatment group are also in the index and would be excluded if they failed to comply. The results in Table 2 cannot separate the two influences. The *High* and *Medium* risk dummies and the stakeholder compliance dummy were included in the calculation of the probability of complying with the environmental requirements at 2002 but are included here in case the influence on new compliance differs from that on 2002 compliance. To isolate the influence of the probability of compliance and the stakeholder compliance we introduce these control variables in different combinations.

Table 2

Our results show that high-risk firms are less likely to comply and although the coefficient on high risk is less risky than that on medium risk they are not statistically significantly different. We also see that the probability of compliance is positively and significantly related to subsequent compliance. The coefficient on the stakeholder compliance variable is only significant where the probability of compliance is also included and the probability variable is a function of stakeholder compliance. Under all specifications the engagement/deletion threat coefficient is strongly and significantly positive. This is consistent with the threat of FTSE4Good deletion combined with FTSE engagement encouraging companies to adopt the practices required by the upgraded FTSE4Good criteria.

In the final column we investigate the interaction of engagement/deletion threat with probability of compliance to examine whether engagement is more effective for those firms that were more likely to have complied in the past but our results are insignificant.

In Table 3 we report the results that include the probability of a firm being included in the FTSE4Good index as in 2002. The rationale is that those firms with competitors in the index, or a national environment that expects FTSE4Good compliance, may more concerned about index membership than others. If so, the strength of the index deletion threat should be stronger for these firms. We report results which simply include engagement/deletion threat and the index probability measure, the index and environmental compliance probability measures, both of these with the additional control variables of high and medium risk and stakeholder compliance and finally all

components of the model. Where the engagement/deletion threat variable is excluded the index probability measure is positive and significant, marginally so in column four. It is considerably less strong than the environmental probability measure and under all circumstances the engagement/deletion threat measure is strongly positive and significant. These results do not provide support for the view that firms expected to be in the FTSE4Good index are driven by the possibility of exclusion from that index.

Table 3

In the final Table we present the refinement where we interact engagement/deletion threat with the probability of membership of the index. The model is run with various sets of control variables including the interaction between engagement and the probability of meeting the environmental criteria. The results for all variables apart from engagement and the engagement-index interaction are consistent with earlier results. However when the engagement-index interaction term is included it is significantly positive, albeit marginally so in the first set of results where control variables are excluded. Wherever the engagement variable is included it is now insignificant. This is consistent with engagement working where firms expect to be in the index and less well elsewhere. In other words engagement appears to be stronger when the threat of exclusion is more effective. However, in Table 3 we saw that in a head to head test engagement dominated index probability.

Table 4 about here

## 6. Conclusions

During the period under review (2002-2005), 345 out of 1046 large firms from around the world moved to comply with environmental management practices as specified by FTSE4Good. Presumably some would have improved their environmental management without FTSE engagement and/or threat of exclusion from the FTSE4Good index. We cannot evaluate precisely the impact of the encouragement but if the same proportion of firms from the treatment group had complied as from the control group we would have about 100 fewer firms complying with the strong environmental management practice

required for FTSE4Good membership in 2005. The companies in treatment group include some of the biggest, best known global companies – such as Apple, Carrefour, Fiat, Gap, HSBC, Mazda, Peugeot, Siemens, Verizon and Walt Disney. While our method doesn't prove that any of these companies adopted new environmental practices as a result of FTSE4Good engagement/deletion threat, it is likely that some of them did.

In addition, we see that firms facing higher environmental risk are less likely to meet the more demanding requirements they face than firms with lower risk, firms which meet stakeholder requirements are more likely to comply although we cannot separate the impact of good governance from increased impact of the index incentive given the partial compliance implied by meeting the stakeholder criteria, and firms which fit the profile of firms that have typically complied with the environmental criteria are more likely to do so than others.

Crucially, firms that meet the engagement criteria are significantly more likely to comply than others although at first sight we cannot separate the engagement effect from the threat of exclusion from the index. The probability of inclusion in the index, which we hypothesise will be positively associated with the costs of exclusion, is not independently related to the propensity to comply. However, when we interact engagement with the probability of inclusion we find that engagement works for those firms that ought to be included in the index and not otherwise. We interpret this as an indication that it is not a question of whether engagement works or threat of exclusion but they are complimentary.

Overall, the results present evidence of the effectiveness of a corporate responsibility index as a driver of improved CSR practices by the companies. The evidence can be further tested by looking at the other changes FTSE has introduced to its criteria in the last 10 years – on human rights, countering bribery, labour standards and climate change. Preliminary analysis suggests that a similar pattern may be observed. Further research could also explore the extent to which management practices required by FTSE4Good really deliver positive social and environmental outcomes and how the activity of the corporate responsibility index can be made more efficient. In particular, if investors were to explicitly support FTSE4Good by expressing concern to companies about their poor ratings, would that amplify the effect? This research could be expanded to study whether

FTSE4Good could be used to drive adoption of CSR practices in a wider range of companies, for example, in emerging markets. Other questions could be related to the extent to which the CSR practices required by a CR index could be made more demanding so that they motivate more substantial changes in corporate behaviour.

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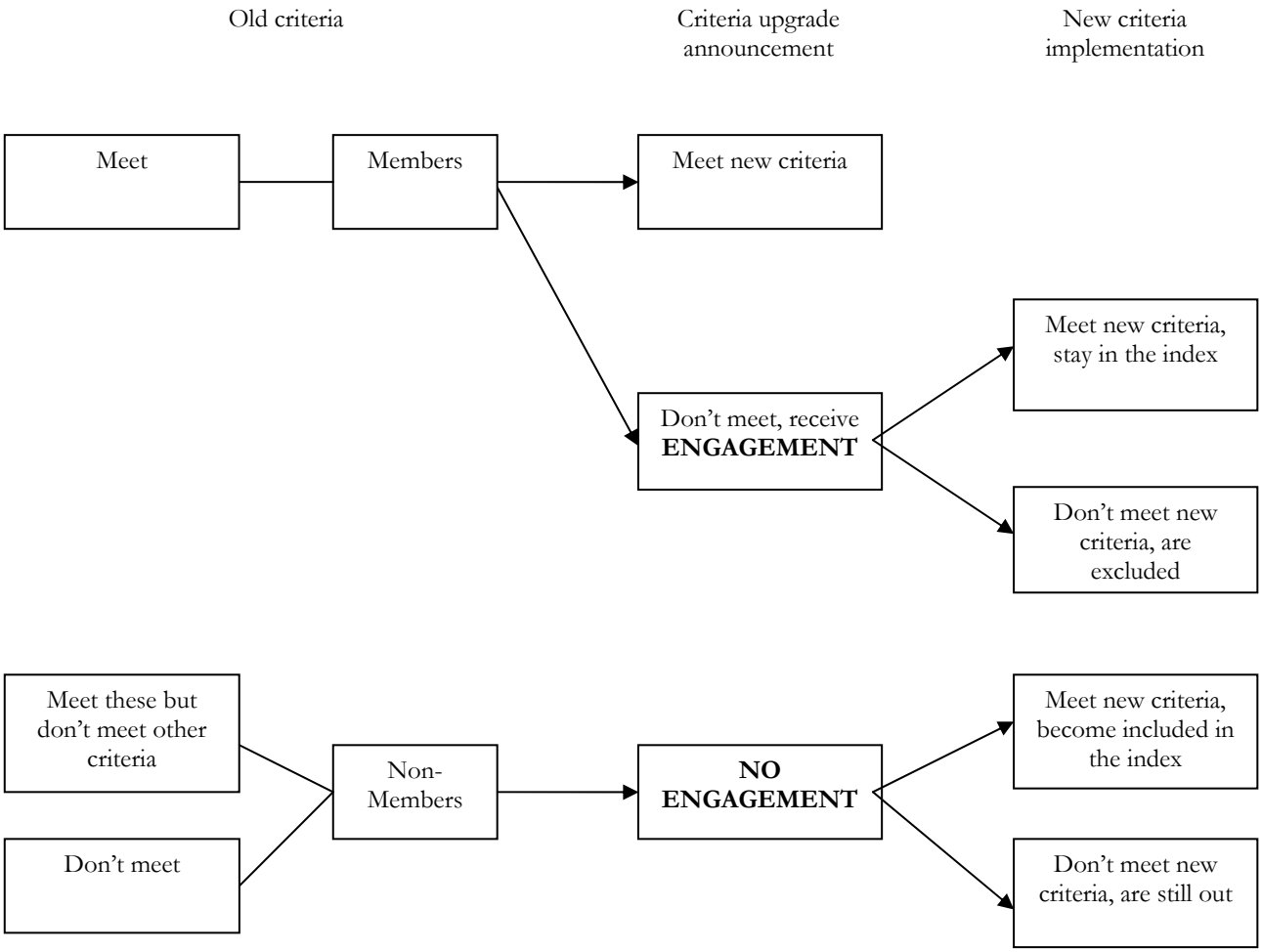
Figure 1. Model of FTSE4Good criteria upgrade process




*Notes*

The figure schematically presents the process of criteria upgrade and the engagement with companies which are members of the index. When new criteria appear or existing criteria are upgraded, companies which were members of the index at the moment of new criteria announcement are contacted in advance and informed about the coming upgrade and potential threat of deletion from the index. Furthermore, the member companies may receive a grace period or schedule before the end of the implementation of the changes and other forms of engagement from FTSE4Good such as consultations and discussions about the new criteria. Companies not part of the index are not contacted. If these companies wish to enter the index, they must comply with upgraded criteria immediately when they are announced.

Table 1. Compliance with FTSE4Good environmental management criteria in 2005

| | Control (n=658) | Treatment (n=388) |
|---|---|---|
| Abstain | 504 | 197 |
| Comply | 154 | 191 |
| Chi2=73.63, p=0.000 | | |
| High | 325 | 21 |
| Medium | 232 | 262 |
| Low | 101 | 105 |
| Chi2=213.53, p=0.000 | | |
| Predict Abstain | 606 | 324 |
| Predict Comply | 52 | 64 |
| Chi2=18.27, p=0.000 | | |
| Predict Out | 452 | 50 |
| Predict In | 206 | 338 |
| Chi2=304.54, p=0.000 | | |
| Stakeholder not met | 426 | 0 |
| Stakeholder met | 232 | 388 |
| Chi2=423.79, p=0.000 | | |

*Notes*

The table presents the distribution of compliance with new environmental criteria between Engagement and Control groups. Treatment group includes 388 firms from the test sample (1,046 firms) which were in the index and did not comply in 2002. Control group includes 658 firms which were outside the index and did not comply in 2002. Abstain denotes not complying in 2005 and Comply denotes moving to meet new environmental criteria in 2005. High, Medium and Low present distribution of the firms with the corresponding environmental risk. Predict Abstain and Predict Comply present the number of firms which are predicted to comply/not with environmental management in 2002 (based on equation 1). Predict Out and Predict In presents the number of firms which are predicted to be included in/be out of the index. Stakeholder not met and Stakeholder met present compliance with stakeholder criterion requirements. In each case, the significance of the differences is estimated using the chi2 test.

Table 2. Regression results: dependent variable: compliance in 2005

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *Constant* | **-0.829** | **-1.740** | **-0.864** | **-1.684** | **-1.777** |
| | (4.75) | (8.51) | (4.90) | (8.29) | (8.23) |
| *High* | -0.293 | **-0.561** | -0.353 | -0.421 | -0.431 |
| | (1.41) | (2.48) | (1.53) | (1.75) | (1.77) |
| *Medium* | **-0.639** | **-0.618** | **-0.640** | **-0.613** | **-0.624** |
| | (3.53) | (3.23) | (3.54) | (3.19) | (3.26) |
| *Engage* | **1.246** | **1.017** | **1.106** | **1.389** | **1.715** |
| | (7.82) | (5.99) | (4.53) | (5.31) | (4.61) |
| $PMet^{02}$ | | **4.703** | | **4.935** | **5.465** |
| | | (10.63) | | (10.66) | (8.90) |
| *Stake* | | | 0.179 | **-0.492** | **-0.567** |
| | | | (0.81) | (2.03) | (2.19) |
| $PMet^{02}$ *X Engage* | | | | | -1.200 |
| | | | | | (1.31) |
| Observations | 1046 | 1029 | 1046 | 1029 | 1029 |
| pseudo R-squared | 0.07 | 0.17 | 0.07 | 0.18 | 0.18 |
| Wald chi-squared | 81.64 | 172.53 | 82.68 | 171.46 | 181.04 |
| Log-pseudolikelihood | - 620.19 | - 539.35 | - 619.81 | - 536.99 | - 536.09 |
| Correctly classified, % | 69 | 74 | 69 | 74 | 75 |

*Notes*

The table represents the results of a logistic regression of compliance with upgraded environmental criteria in 2005 ($Met^{05}$) on a set of independent variables.

The estimated model is:

$$Met_j^{05} = b_0 + b_1 High_j + b_2 Medium_j + b_3 Stake_j + b_4 PMet_j^{02} + b_5 Engage_j + b_6 PMet_j^{02} \times Engage_j + e_j$$

The main explanatory variables include receiving engagement from FTSE4Good and threat of deletion (*Engage*), probability of compliance with environmental criterion in 2002 ($PMet^{02}$) and the interaction term between probability of compliance and engagement/deletion threat ($PMet^{02}$ *X Engage*) to account for the relative effect of engagement/deletion threat given how close the company is to complying. The control variables include high environmental risk (*High*), medium environmental risk (*Med*) and meeting stakeholder criterion (*Stake*). Columns (1)-(5) present different model specifications. The absolute t-statistics are given underneath in parentheses. The coefficients significant at 5% are marked bold.

Table 3. Regression results: dependent variable: compliance in 2005

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *Constant* | **-1.090** | **-2.429** | **-0.748** | **-1.760** | **-1.736** |
| | (7.38) | (12.32) | (3.35) | (7.05) | (6.89) |
| *Engage* | **1.238** | | **1.156** | | **1.363** |
| | (7.25) | | (4.56) | | (4.96) |
| $PInd^{02}$ | -0.284 | **1.270** | -0.288 | **0.688** | 0.134 |
| | (0.85) | (4.25) | (0.85) | (1.97) | (0.35) |
| $PMet^{02}$ | | **4.885** | | **4.775** | **4.941** |
| | | (11.23) | | (10.29) | (10.58) |
| *High* | | | -0.401 | **-0.858** | -0.400 |
| | | | (1.71) | (3.94) | (1.65) |
| *Medium* | | | **-0.647** | **-0.571** | **-0.613** |
| | | | (3.56) | (3.16) | (3.20) |
| *Stake* | | | 0.202 | 0.268 | **-0.504** |
| | | | (0.92) | (1.58) | (2.07) |
| Observations | 1045 | 1028 | 1045 | 1028 | 1028 |
| pseudo R-squared | 0.06 | 0.14 | 0.07 | 0.15 | 0.18 |
| Wald chi-squared | 71.06 | 133.33 | 83.36 | 149.19 | 170.19 |
| Log-pseudolikelihood | - 625.85 | - 560.16 | - 618.66 | - 551.72 | - 536.81 |
| Correctly classified, % | 67 | 74 | 68 | 74 | 75 |

*Notes*

The table represents the results of a logistic regression of compliance with upgraded environmental criteria in 2005 ($Met^{05}$) on a set of independent variables.

The estimated model is:

$$Met_j^{05} = b_0 + b_1 High_j + b_2 Medium_j + b_3 Stake_j + b_4 PMet_j^{02} + b_5 Engage_j + b_6 PIndex_j^{02} + e_j$$

The main explanatory variables include receiving engagement from FTSE4Good and threat of deletion (*Engage*), probability of compliance with environmental criterion in 2002 ($PMet^{02}$) and probability of being in the index in 2002 ($PInd^{02}$). The control variables include high environmental risk (*High*), medium environmental risk (*Medium*) and meeting stakeholder criterion (*Stake*). Columns (1)-(5) present different model specifications. The absolute t-statistics are given underneath in parentheses. The coefficients significant at 5% are marked bold.

Table 4. Regression results: dependent variable: compliance in 2005

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| *Constant* | **-0.957** | **-2.088** | **-0.506** | **-1.493** | **-1.498** |
| | (6.03) | (10.55) | (2.13) | (5.88) | (5.76) |
| *Engage* | 0.421 | | 0.0615 | | 0.188 |
| | (0.92) | | (0.12) | | (0.32) |
| $PInd^{02}$ | -0.687 | -0.401 | **-0.849** | -0.523 | -0.423 |
| | (1.71) | (0.90) | (2.06) | (1.17) | (0.94) |
| $PInd^{02}$ *X Engage* | 1.454 | **1.812** | **1.867** | **2.475** | **1.991** |
| | (1.93) | (5.38) | (2.40) | (4.88) | (2.21) |
| $PMet^{02}$ | | **4.697** | | **5.248** | **4.959** |
| | | (10.75) | | (9.14) | (10.53) |
| *High* | | | **-0.513** | **-0.571** | **-0.512** |
| | | | (2.17) | (2.40) | (2.10) |
| *Medium* | | | **-0.701** | **-0.683** | **-0.665** |
| | | | (3.82) | (3.54) | (3.43) |
| *Stake* | | | 0.246 | -0.444 | -0.460 |
| | | | (1.12) | (1.90) | (1.89) |
| $PMet^{02}$ *X Engage* | | | | -0.664 | |
| | | | | (0.84) | |
| Observations | 1045 | 1028 | 1045 | 1028 | 1028 |
| pseudo R-sq | 0.06 | 0.17 | 0.07 | 0.18 | 0.18 |
| Wald chi-squared | 73.45 | 155.27 | 88.88 | 174.44 | 170.33 |
| Log-pseudolikelihood | - 623.98 | - 542.72 | - 615.78 | - 533.93 | - 534.23 |
| Correctly classified, % | 68 | 75 | 68 | 75 | 74 |

*Notes*

The table represents the results of a logistic regression of compliance with upgraded environmental criteria in 2005 ($Met^{05}$) on a set of independent variables.

The estimated model is:

$$Met_j^{05} = b_0 + b_1 High_j + b_2 Medium_j + b_3 Stake_j + b_4 PMet_j^{02} + b_5 Engage_j + \ldots$$
$$b_6 PMet_j^{02} \times Engage_j + b_7 PIndex_j^{02} + b_8 PIndex_j^{02} \times Engage_j + e_j$$

The main explanatory variables include receiving engagement from FTSE4Good and threat of deletion (*Engage*), probability of compliance with environmental criterion in 2002 ($PMet^{02}$), probability of being in the index in 2002 ($PInd^{02}$) and two interaction terms ($PInd^{02}$ *X Engage* and $PMet^{02}$ *X Engage*) to account for the relative effect of engagement/deletion threat. The control variables include high environmental risk (*High*), medium environmental risk (*Medium*) and meeting stakeholder criterion (*Stake*). Columns (1)-(5) present different model specifications. The absolute t-statistics are given underneath in parentheses. The coefficients significant at 5% are marked bold.

## APPENDIX

Table A1. Geographical distribution of the original sample

| Country | Freq. | Percent | $Met^{02}$ | $Met^{05}$ | $Ind^{02}$ | $Ind^{05}$ |
|---|---|---|---|---|---|---|
| Australia | 49 | 3.37 | 0.143 | 0.347 | 0.286 | 0.347 |
| Austria | 7 | 0.48 | 0.143 | 0.429 | 0.571 | 0.429 |
| Belgium | 12 | 0.83 | 0.250 | 0.417 | 0.583 | 0.583 |
| Canada | 65 | 4.47 | 0.185 | 0.453 | 0.554 | 0.429 |
| Denmark | 10 | 0.69 | 0.400 | 0.700 | 0.800 | 0.600 |
| Finland | 5 | 0.34 | 0.800 | 1.000 | 1.000 | 1.000 |
| France | 33 | 2.27 | 0.152 | 0.848 | 0.576 | 0.758 |
| Germany | 30 | 2.06 | 0.600 | 0.767 | 0.733 | 0.767 |
| Greece | 10 | 0.69 | 0.000 | 0.600 | 0.700 | 0.700 |
| Hong Kong | 43 | 2.96 | 0.047 | 0.070 | 0.070 | 0.047 |
| Ireland | 7 | 0.48 | 0.000 | 0.143 | 0.571 | 0.286 |
| Italy | 24 | 1.65 | 0.083 | 0.417 | 0.458 | 0.375 |
| Japan | 280 | 19.26 | 0.404 | 0.689 | 0.175 | 0.493 |
| Netherlands | 16 | 1.1 | 0.375 | 0.688 | 0.625 | 0.688 |
| New Zealand | 19 | 1.31 | 0.158 | 0.368 | 0.105 | 0.421 |
| Norway | 7 | 0.48 | 0.571 | 0.857 | 0.714 | 0.857 |
| Portugal | 6 | 0.41 | 0.167 | 0.167 | 0.333 | 0.167 |
| Singapore | 31 | 2.13 | 0.032 | 0.097 | 0.065 | 0.097 |
| Spain | 13 | 0.89 | 0.231 | 0.462 | 0.231 | 0.462 |
| Sweden | 21 | 1.44 | 0.714 | 0.905 | 0.571 | 0.857 |
| Switzerland | 14 | 0.96 | 0.571 | 0.857 | 0.714 | 0.714 |
| UK | 403 | 27.72 | 0.347 | 0.623 | 0.591 | 0.633 |
| USA | 349 | 24 | 0.152 | 0.277 | 0.550 | 0.539 |
| Total | 1,454 | 100 | 0.279 | 0.511 | 0.457 | 0.535 |

Table A2. Industrial distribution of the original sample

| Sector | Freq. | Percent | $Met^{02}$ | $Met^{05}$ | $Ind^{02}$ | $Ind^{05}$ |
|---|---|---|---|---|---|---|
| Automobiles & Parts | 32 | 2.2 | 0.438 | 0.719 | 0.531 | 0.625 |
| Banks | 106 | 7.29 | 0.142 | 0.453 | 0.698 | 0.632 |
| Beverages | 23 | 1.58 | 0.304 | 0.652 | 0.696 | 0.609 |
| Chemicals | 62 | 4.26 | 0.548 | 0.742 | 0.210 | 0.597 |
| Construction & Building Materials | 70 | 4.81 | 0.186 | 0.443 | 0.129 | 0.343 |
| Diversified Industrials | 23 | 1.58 | 0.174 | 0.217 | 0.174 | 0.261 |
| Electricity | 17 | 1.17 | 0.294 | 0.563 | 0.353 | 0.563 |
| Electronic & Electrical Equipment | 56 | 3.85 | 0.464 | 0.768 | 0.411 | 0.519 |
| Engineering & Machinery | 44 | 3.03 | 0.386 | 0.591 | 0.364 | 0.523 |
| Food & Drug Retailers | 23 | 1.58 | 0.130 | 0.174 | 0.261 | 0.304 |
| Food Producers & Processors | 44 | 3.03 | 0.205 | 0.273 | 0.159 | 0.273 |
| Forestry & Paper | 16 | 1.1 | 0.625 | 0.625 | 0.438 | 0.625 |
| General Retailers | 73 | 5.02 | 0.151 | 0.278 | 0.589 | 0.458 |
| Health | 39 | 2.68 | 0.231 | 0.462 | 0.615 | 0.538 |
| Household Goods & Textiles | 35 | 2.41 | 0.314 | 0.629 | 0.429 | 0.514 |
| Information Technology Hardware | 70 | 4.81 | 0.414 | 0.681 | 0.457 | 0.662 |
| Insurance | 46 | 3.16 | 0.283 | 0.543 | 0.717 | 0.739 |
| Leisure & Hotels | 39 | 2.68 | 0.026 | 0.308 | 0.590 | 0.513 |
| Life Assurance | 23 | 1.58 | 0.217 | 0.435 | 0.739 | 0.565 |
| Media & Entertainment | 75 | 5.16 | 0.213 | 0.480 | 0.587 | 0.587 |
| Mining | 13 | 0.89 | 0.231 | 0.308 | 0.231 | 0.231 |
| Oil & Gas | 55 | 3.78 | 0.309 | 0.436 | 0.218 | 0.273 |
| Personal Care & Household Products | 18 | 1.24 | 0.500 | 0.722 | 0.556 | 0.556 |
| Pharmaceuticals & Biotechnology | 54 | 3.71 | 0.333 | 0.537 | 0.352 | 0.537 |
| Real Estate | 54 | 3.71 | 0.333 | 0.444 | 0.389 | 0.453 |
| Software & Computer Services | 59 | 4.06 | 0.254 | 0.542 | 0.458 | 0.593 |
| Speciality & Other Finance | 66 | 4.54 | 0.106 | 0.288 | 0.545 | 0.515 |
| Steel & Other Metals | 17 | 1.17 | 0.471 | 0.706 | 0.294 | 0.529 |
| Support Services | 68 | 4.68 | 0.235 | 0.618 | 0.544 | 0.662 |
| Telecommunication Services | 45 | 3.09 | 0.356 | 0.778 | 0.689 | 0.844 |
| Transport | 69 | 4.75 | 0.232 | 0.478 | 0.377 | 0.500 |
| Utilities - Other | 20 | 1.38 | 0.500 | 0.650 | 0.450 | 0.632 |
| Total | 1,454 | 100 | 0.279 | 0.511 | 0.457 | 0.535 |